

## ABSTRACT

A small vacuum chamber is provided which needs no load lock chamber.

In a voice coil type linear motor including a closed magnetic circuit formed into the  $\theta$ -shape, by a pair of outer yokes (11), an inner yoke (12) and side yokes (13) and in which an armature is fixed to an inner side of the outer yoke (11), whereas permanent magnet sides are allowed to move, a coil (18) is wound around a bobbin (17), an exterior case 23 for the bobbin is constructed so as to make a coil portion watertight, and a fluid supply port and a fluid discharge port are provided either on the bobbin or on the case, whereby a cooling fluid is made to flow between the coil and the case so as to cool the coil directly.